

## ASOS OPERATIONS AND MONITORING CENTER

### 1. INTRODUCTION

The AOMC provides near real-time monitoring of the ASOS performance by identifying those ASOS sites unable to generate an observation during a standard window time, and those ASOS sites transmitting an observation with the maintenance status flag attached--indicating possible sensor problems. The AOMC will also operate a trouble desk for tracking and documenting all reported and/or detected malfunctions involving ASOS sites. To assist those personnel reporting an ASOS site malfunction, toll-free telephone service will be provided.

The AOMC will initiate corrective maintenance action for all reported and/or detected ASOS malfunctions with the notification of the designed maintenance point-of-contact. The tracking of all maintenance actions will be automated to alert the AOMC operator when the projected restoration time for a specific maintenance action has been exceeded. The designated maintenance point-of-contact will then be notified to obtain a current update of the maintenance action.

Additionally, the AOMC maintains a data base of site specific parameters (tem data files) and provides access to that data base via a dial-up line. The AOMC also furnishes a master time source to all ASOS sites using the National Institute of Standards and Technology Automated Computer Time Service (NIST ACTS) to maintain accurate internal clocks and synchronization of the ASOS.

The AOMC was established as part of the Systems Monitoring and Coordination Center (SMCC) operating unit of the Systems Operations Center. The AOMC/SMCC controllers are tasked with operational duties and responsibilities in the day-to-day operation of the AOMC. A day-working analyst augments the current controller staff. The daily operation of the AOMC will result in a modest increase in workload for the AOMC/SMCC controllers.

### 2. FUNCTIONAL DESIGN

The AOMC will operate on an around-the-clock basis providing operational and maintenance support for the ASOS. The foreground portion of the AOMC computer system is that segment used to assist in the monitoring and maintenance notification process. The background system of the AOMC requires no intervention by the AOMC operator to provide support to ASOS. The AOMC operator is responsible for ensuring that both the foreground and background systems remain operational.

#### 2.1 **Foreground Functions (System monitoring and maintenance notification)** -

The foreground process encompasses the following areas:

- a. Near real-time monitoring of ASOS performance;
- b. Single point-of-contact for ASOS maintenance status;
- c. Initiation of corrective maintenance action when ASOS observations are missing, the maintenance status flag is present within the observation, or when problems are reported via telephone;
- d. Remote maintenance diagnostics capability; and
- e. Maintenance of a trouble desk for tracking and documenting all reported and/or detected ASOS malfunctions.

The AOMC monitoring operation consists of identifying those ASOS sites whose observation was not received at the National Weather Service Telecommunications Gateway (NWSTG) by a given time (presently H+10 min) and any observation transmitted with the maintenance status flag attached. The processing of this data will be accomplished by the NWSTG computers. The Gateway will compile this data into two separate files: one with those Surface Aviation Observations (SAO) containing a maintenance status flag, the other containing those sites which failed to generate an SAO by the search time (e.g., H+10). The above files will be available to the AOMC in near real-time and immediately after the search time, respectively.

The maintenance status (fault) flag is automatically generated by an ASOS sites Acquisition Control Unit (ACU) when a fault or malfunction occurs. The maintenance status flag alerts the AOMC that maintenance support is required. The AOMC will initiate corrective maintenance action whenever;

- a. The NWSTG does not receive a high priority site's SAO prior to the search time or all a lower priority SAO is missed over two search times. (The number of consecutive missing observations is a user input parameter in the AOMC data base. This parameter will be adjusted in the future based on operational experience with ASOS field sites); or
- b. a site transmits its observation with a fault flag attached.

The AOMC's trouble desk will track and document all reported and/or detected ASOS malfunctions. When an ASOS site has a malfunction, the AOMC will call the designated maintenance point-of-contact and provide notification of the malfunction. The AOMC will also provide a projected restoration time based on pre-established criteria (site class and type of failure). A follow-up call will be made if the restoration time is exceeded. When the malfunction has been repaired, the technician will notify the AOMC that the repair is completed and the trouble report will be closed.

When an ASOS malfunction is reported via the toll-free trouble reporting telephone numbers, a trouble report for the malfunction will be opened. The AOMC will determine whether and what type corrective action is needed. If requested, the AOMC will notify the individual reporting the problem when the repair is completed.

## 2.2 Background Function )Site database and master time source) -

The AOMC provides additional support to ASOS sites through the management of their site-specific parameter files. The ASOS site-specific parameter files will consist of ten data files required by each ASOS site to remain operational. Additionally, the AOMC operates a software configuration management system capable of recreating a version of a site's master files upon request.

The uploading and downloading of an ASOS site's parameter files will be automated as much as possible. The software for an ASOS site is designed so that if any change(s) occurs to the ten data files, the ASOS will automatically dial the AOMC to upload the new configuration for storage in the AOMC's data base.

The ASOS time synchronization will be an automated process with an ASOS site dialing into the AOMC and retrieving a time update. The precision time source used by the AOMC will be the NIST ACTS.

An ASOS site's software will be configured to request a time update every 60 days or when a system reset/crash has occurred. When an ASOS site has been reset, the site will obtain three time updates: immediately after the system reset, 10 hours after the reset, and 7 days after the reset. After that, a time update will be required every 60 days.